Idaho Department of Health and Welfare

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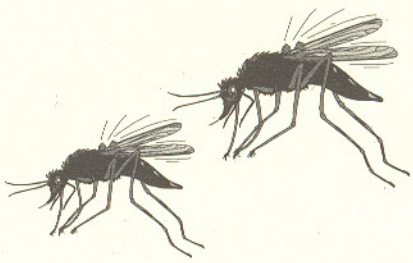
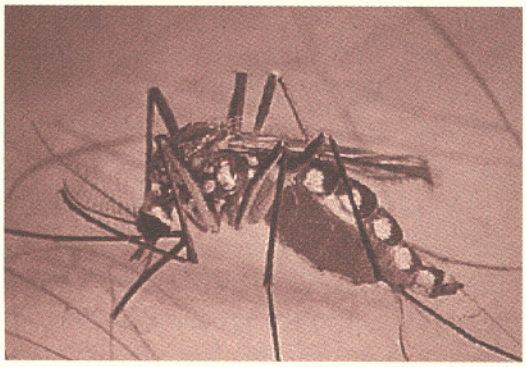


Improving Arboviral Surveillance in Idaho

Idaho is stepping up surveillance efforts for arboviral infections, in large part due to the recent introduction of West Nile virus (WNV) into the United States. Following is a brief overview of several important arboviral diseases including information about reporting, sampling, and testing.

Western Equine Encephalomyelitis (WEE) and St. Louis Encephalitis (SLE) are the most common arthropod-borne viral illnesses found in the western United States. West Nile virus, the causative agent of West Nile fever, introduced into the eastern United States for the first time in 1999, is a newly emergent arboviral agent.

Arboviruses are typically introduced into new areas by infected migratory birds, and maintained in local ecosystems by mosquitos and amplifying hosts. Standing water, such as that found in or near lakes, streams, marshes, or irrigated fields, make ideal habitats for mosquito larvae and migratory birds. With the right combination of infected migratory birds and mosquitos, the potential for the dissemination of arboviral infections increases.



WEE

Western Equine Encephalomyelitis is caused by an alphavirus transmitted to humans by the *Culex tarsalis* mosquito. Birds are the natural hosts, while horses and humans are considered dead-end hosts, incapable of developing a viremia of sufficient titer to transmit the virus to biting mosquitos. Onset of human illness occurs between 5-10 days post-infection. In infants, approximately 1 in 50 infections leads to clinical illness, while in

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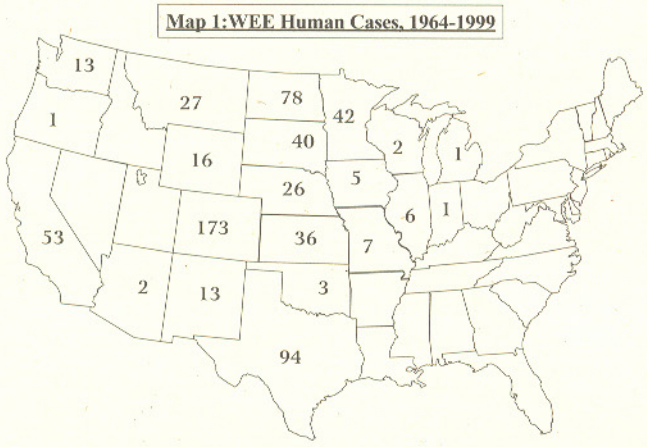
INSIDE:

Map 1:WEE Human Cases, 1964-1999

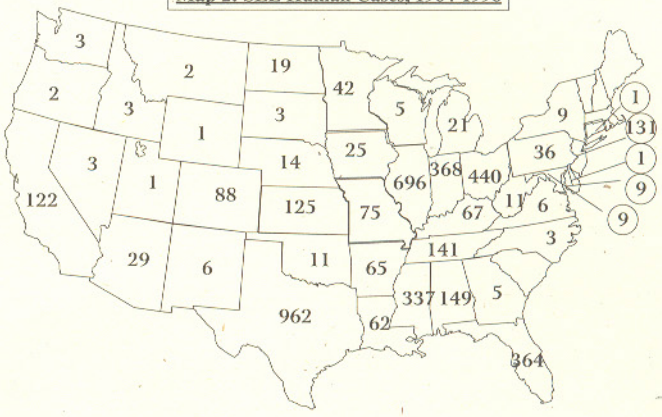


adults illness occurs in only 1 in 1000. Although most infections are inapparent, symptoms can range from mild to severe, with frank encephalitis, coma, and death in 1-5% of clinically ill persons. Although evidence suggests that WEE has sporadically infected veterinary species in Idaho, no human cases have been documented in Idaho since the establishment of the Centers for Disease Control and Prevention (CDC) database in 1964. The last two known human cases in the nation occurred in Wyoming in 1994. Map 1 shows the distribution of the 639 human cases from 1964 to 1999.

SLE

St. Louis Encephalitis is caused by a flavivirus transmitted to humans by *Culex* spp. mosquitos. SLE is considered the most medically important mosquito-borne arbovirus in the United States (see Map 2), with 4,478 cases reported since 1964. Like the WEE virus, the main hosts are migratory birds. Humans act as dead-end hosts. Onset of human illness occurs between 5-15 days post-infection. Clinical SLE is more common in people over 60 years of age, with 1 in 60 infected persons manifesting symptoms; in children, clinical illness occurs in only approximately 1 in 800 infections. When illness occurs, symptoms range from mild fever and headache to high fever, stiff neck, disorientation, stupor, tremors, occasional convulsions (especially in infants), and spastic (but rarely flaccid) paralysis. Mortality is higher in persons over 60 years of age (9-20%), compared to < 9% for individuals under 60 years of age. The three Idaho cases noted on Map 2 occurred in 1969.

Map 2: SLE Human Cases, 1964-1996



WNV

West Nile virus is a flavivirus closely related to the SLE virus, and requires similar ecologic niches. No person-to-person or animal-to-person spread has been documented; it appears to be strictly an arthropod-borne virus. It has been theorized that the West Nile virus was first introduced into the continental United States, in eastern New York, during the fall of 1999, as its presence had never been documented prior to that time. WNV caused morbidity and mortality in humans, primarily in the Borough of Queens. Among 62 documented human cases, 7 were fatal. The outbreak was originally believed to be caused by the SLE virus due to the close antigenic relationship between SLE and WNV

causing cross-reactivity in certain immunologic tests and the fact that WNV had never before been recognized as a pathogen in the western hemisphere. Horse deaths and large die-offs of crows and related bird species were also reported in the surrounding communities and countryside. Despite aggressive surveillance and mosquito eradication efforts by public health and environmental health officials, spread of WNV has begun anew in 2000, with evidence of viral activity beyond New York, including New Jersey, Massachusetts, Connecticut, New Hampshire, Maryland, District of Columbia, Pennsylvania, and Rhode Island (see Map 3). Like SLE, most human infections with WNV are inapparent; however, when illness does occur, manifestations tend to be more severe in the elderly population. Onset of human illness is 3-15 days post-infection. Most infections are mild; symptoms include fever, headache, and body aches, often with skin rash and swollen lymph glands. More severe infections may be marked by headache, high fever, stiff neck, altered mental status, tremors, convulsions, muscle weakness, paralysis, and, rarely, death. Case-fatality rates range from 3% to 15%, and are highest in the elderly. As of this printing, 17 human cases have been identified in 2000; 14 in NY and 3 in NJ, one with a fatal outcome.

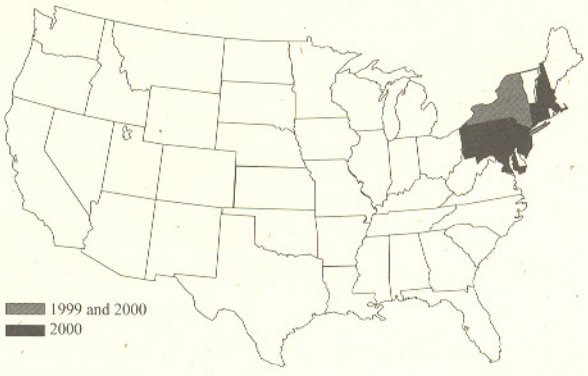
No evidence of West Nile virus activity has been detected, so far, outside of the eastern United States. However, due to the high potential for spread, which is already evident by the apparent spread to numerous states between 1999 and 2000, there is a nationwide push to enhance surveillance efforts for cases of West Nile fever, and other important arboviral infections.

The Idaho Division of Health has received a grant from CDC to promote such surveillance efforts for human and veterinary cases of arboviral illness. Information on how to arrange testing for diagnosing suspect cases of arboviral infection is found on page 4.

WNV HISTORY

West Nile virus was first isolated from a febrile adult woman in the West Nile District of Uganda in 1937. The virus became recognized as the cause of severe human meningoencephalitis in elderly patients during an outbreak in Israel in 1957. West Nile virus has been described in Africa, Europe, the Middle East, west and central Asia, Oceania (sub-type Kunjin), and most recently, North America. Recent outbreaks of WNV encephalitis in humans have occurred in Algeria in 1994, Romania in 1996-1997, the Czech Republic in 1997, the Democratic Republic of the Congo in 1998, Russia in 1999, the United States in 1999-2000, and Camargue, France and Israel in 2000. The appearance of WNV in North America in 1999 may be an important milestone in the evolving history of this virus. It is not known where the U.S. virus originated, but it is most closely related genetically to strains found in the Middle East.

Map 3: Evidence for WNV Activity in the United States



ARBOVIRUS TESTING IN IDAHO

The state laboratory is currently able to assist with any undiagnosed aseptic encephalitis, meningitis, or meningoencephalitis cases by facilitating testing for antibodies against WEE, SLE, and WN viruses. Currently, a travel history to the eastern seaboard is important when considering WNV in the differential diagnosis; however, due to the potential for spread westward, suspicion for WNV infections is encouraged for any undiagnosed case of aseptic central nervous system disease.

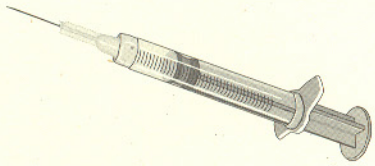
If you have a patient with undiagnosed aseptic encephalitis, meningitis, or meningoencephalitis, and you suspect an arboviral infection, especially West Nile virus, please call Roy Moulton at the State Laboratory (334-2235 ext. 228) to make shipping arrangements of CSF and paired serum, if available. ***Testing for these arboviral agents is free of charge.***

MORE INFORMATION ON WNV...

To learn more about West Nile virus, links to fact sheets, and answers to frequently asked questions, go to our home page at **www.idahohealth.org** and click on WEST NILE VIRUS under 'current issues'.

Expected Delays in Influenza Vaccine Shipment- New Vaccination Strategies

This year the Food and Drug Administration's Vaccines and Related Biologic Products Advisory Committee recommended that the influenza strains included in the upcoming vaccine include A/Panama (H3/N2), A/New Caledonia (H1/N1), and B/Yamanashi. Unfortunately, some of the manufacturers have reported that the A/Panama (H3/N2) strain has not grown as vigorously in culture as was anticipated, leading to an anticipated delay in vaccine delivery. Two other factors this year may also lead to a vaccine crunch: regulatory actions taken against two of the manufacturers causing a lag in production, and new CDC recommendations expanding the age range for routine vaccination from 65 years of age and older to 50 years of age and older. Some influenza vaccine is already being shipped, and it is anticipated that adequate vaccine for all those who desire it will be available by late December. Quantities of available flu vaccine will be continually assessed as production proceeds and flu season approaches.



CDC recommendations regarding flu vaccination in light of the delay in delivery of some vaccine:

- ★ Initial vaccination efforts should focus on persons at high risk of complications associated with influenza, and on health care workers.
- ★ Mass vaccination campaigns should be scheduled later in the season as availability of vaccine is assured.

- ★ The 2000--01 flu season will be the first for which flu vaccination is recommended for all persons aged ≥50 years. Special efforts should be undertaken, after supplies have improved, to vaccinate persons age 50-64 years.

Who is considered at highest risk for complications from influenza?

- ★ Person 65 years and older,
- ★ Nursing home and chronic care facility residents,
- ★ Individuals 6 months of age or older with asthma, or other chronic pulmonary or cardiac conditions,
- ★ Women in their 2nd or 3rd trimester of pregnancy during flu season,
- ★ Adults and children (6 months or older) requiring regular medical follow-up or hospitalization for metabolic diseases (eg: diabetes), kidney dysfunction, hemoglobinopathies, or immune system problems, and
- ★ Children from 6 months to 18 years of age receiving long-term aspirin therapy, who would be at risk of developing Reye syndrome if infected with the influenza virus.

Who else should be given the vaccination during the upcoming flu season?

- ★ Health-care workers who have close contact with persons at high-risk,
- ★ Household members of high-risk individuals, and
- ★ Persons age 50-64 (as supplies improve).

The Idaho Immunization Program and the Flu Vaccine Delay

In response to expected delays of influenza vaccine delivery this year, the Idaho Immunization Program will serve to facilitate communication between providers regarding vaccine availability. Notification of excess or lack of vaccine should be given to Bob Salisbury, Vaccines for Children Coordinator, at 208-334-4949.

SENTINEL PHYSICIANS SOUGHT

The State Public Health Laboratory and the Centers of Disease Control and Prevention are looking for Idaho physicians willing to conduct surveillance for influenza-like illness (ILI) during the 2000-2001 season. Every year sentinel physicians play the vital role in reporting the geographic distribution and strain of circulating influenza. An Influenza Sentinel Physician reports total numbers of patient visits versus numbers of visits for ILI each week to CDC by Internet, telephone, or fax. This data is a critical part of monitoring the impact of influenza each year. For more information, contact Colleen Greenwalt at the State Laboratory, 208-334-2235, ext. 229.

Outbreaks of Gastrointestinal Illness: New Testing Approach

Norwalk-like viruses are believed to be the most common agents of foodborne and waterborne viral gastroenteritis outbreaks. However, testing for Norwalk-like viruses at the state laboratory have previously not been done, because of the lack of sufficiently sensitive testing methods and local expertise. CDC can perform testing, and some outbreaks were detected through their laboratory, but

CDC does not test an outbreak with fewer than six samples available for testing. Now the Idaho State Laboratory is able to test for Norwalk-like viruses via RT-PCR (reverse-transcriptase polymerase chain reaction) testing. Until more experience is gained in this technique, confirmation testing of positive findings will still be performed by CDC. Testing is aimed at outbreaks, and requires prior arrangement in order to submit samples. If you would like more information, please contact Colleen Greenwalt or Roy Moulton at the State Public Health Laboratory at 208-334-2235.

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